



October 13, 2016

Meagan E. Ormand Golder Associates Inc. 2108 W. Laburnum Ave. Suite 200 Richmond, VA 23227

RE: Project: Bremo Weekly Process Pace Project No.: 92315742

# Dear Meagan Ormand:

Enclosed are the analytical results for sample(s) received by the laboratory on October 12, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nicole Gasiorowski

Micolo Lassorouske

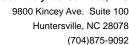
nicole.gasiorowski@pacelabs.com

**Project Manager** 

**Enclosures** 

cc: Ron DiFrancesco, Golder Associates Inc. Arielle Green, Golder Associates Inc. Martha Smith, Golder Associates Inc. Mike Williams, Golder Associates Inc







# **CERTIFICATIONS**

Project: Bremo Weekly Process

Pace Project No.: 92315742

**Ormond Beach Certification IDs** 

8 East Tower Circle, Ormond Beach, FL 32174

Alabama Certification #: 41320 Connecticut Certification #: PH-0216

Delaware Certification: FL NELAC Reciprocity

Florida Certification #: E83079 Georgia Certification #: 955

Guam Certification: FL NELAC Reciprocity Hawaii Certification: FL NELAC Reciprocity

Illinois Certification #: 200068

Indiana Certification: FL NELAC Reciprocity

Kansas Certification #: E-10383

Louisiana Certification #: FL NELAC Reciprocity Louisiana Environmental Certificate #: 05007

Maryland Certification: #346 Michigan Certification #: 9911

Mississippi Certification: FL NELAC Reciprocity

9800 Kincey Ave. Ste 100, Huntersville, NC 28078 North Carolina Drinking Water Certification #: 37706

North Carolina Field Services Certification #: 5342

Missouri Certification #: 236 Montana Certification #: Cert 0074

South Carolina Certification #: 99006001

Nebraska Certification: NE-OS-28-14

North Carolina Certification #: 12710

Pennsylvania Certification #: 68-00547

South Carolina Certification: #96042001

Texas Certification: FL NELAC Reciprocity

Virginia Environmental Certification #: 460165

Wyoming Certification: FL NELAC Reciprocity

Wyoming (EPA Region 8): FL NELAC Reciprocity

US Virgin Islands Certification: FL NELAC Reciprocity

Puerto Rico Certification #: FL01264

Tennessee Certification #: TN02974

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

New York Certification #: 11608

Oklahoma Certification #: D9947

Nevada Certification: FL NELAC Reciprocity

North Carolina Environmental Certificate #: 667

Florida/NELAP Certification #: E87627 Kentucky UST Certification #: 84 Virginia/VELAP Certification #: 460221

Asheville Certification IDs

**Charlotte Certification IDs** 

2225 Riverside Drive, Asheville, NC 28804 Florida/NELAP Certification #: E87648

North Carolina Wastewater Certification #: 12

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40 South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

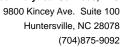
**Eden Certification IDs** 

205 East Meadow Road Suite A, Eden, NC 27288

North Carolina Drinking Water Certification #: 37738

North Carolina Wastewater Certification #: 633

Virginia/VELAP Certification #: 460025



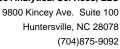


# **SAMPLE ANALYTE COUNT**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92315742001	T3-161011-1548-S3	SM 2540D	KCE	1	PASI-E
		EPA 350.1 1993 Rev 2.0	KCE	1	PASI-E
		SM 4500-CI-E-2011	KCE	1	PASI-E
		EPA 1664B	JMS	1	PASI-C
		EPA 200.7	CKJ	1	PASI-O
		Trivalent Chromium Calculation	CKJ	1	PASI-O
		EPA 200.8	DRS	10	PASI-O
		EPA 245.1	ANB	1	PASI-A
		EPA 218.7	AEM	1	PASI-O





# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Method: SM 2540D

Description: 2540D TSS, Low-Level, Eden
Client: Golder\_Dominion\_Bremo
Date: October 13, 2016

# **General Information:**

1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

# **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

# **Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Method: EPA 350.1 1993 Rev 2.0

Description: 350.1 Ammonia

Client: Golder\_Dominion\_Bremo
Date: October 13, 2016

# **General Information:**

1 sample was analyzed for EPA 350.1 1993 Rev 2.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

# **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Method Blank:

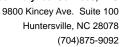
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Method: SM 4500-CI-E-2011 Description: 4500 Chloride

Client: Golder\_Dominion\_Bremo

Date: October 13, 2016

# **General Information:**

1 sample was analyzed for SM 4500-CI-E-2011. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

# **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



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# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Method: EPA 1664B

Description: HEM, Oil and Grease
Client: Golder\_Dominion\_Bremo
Date: October 13, 2016

# **General Information:**

1 sample was analyzed for EPA 1664B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

# **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

# Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

# Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



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# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Method: EPA 200.7

Description: 200.7 MET ICP

Client: Golder\_Dominion\_Bremo

**Date:** October 13, 2016

# **General Information:**

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

# **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

# **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### Method Blank:

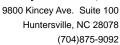
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

# Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

 Method:
 Trivalent Chromium Calculation

 Description:
 Trivalent Chromium Calculation

 Client:
 Golder\_Dominion\_Bremo

Date: October 13, 2016

# **General Information:**

1 sample was analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

# **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

# **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

# Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

# Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



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# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: Golder\_Dominion\_Bremo
Date: October 13, 2016

# **General Information:**

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# **Sample Preparation:**

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

# **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

# Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

# Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



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# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Method: EPA 245.1 Description: 245.1 Mercury

Client: Golder\_Dominion\_Bremo

Date: October 13, 2016

# **General Information:**

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

# **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

# **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### Method Blank:

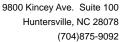
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

# Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Method: EPA 218.7

Description: Hexavalent Chromium by IC
Client: Golder\_Dominion\_Bremo
Date: October 13, 2016

# **General Information:**

1 sample was analyzed for EPA 218.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

# **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

# **Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.



# **ANALYTICAL RESULTS**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Date: 10/13/2016 06:20 PM

Sample: T3-161011-1548-S3	Lab ID: 923	15742001	Collected: 10/11/1	6 15:48	Received: 10	0/12/16 14:18	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2540D TSS, Low-Level, Eden	Analytical Met	hod: SM 25	40D					
Total Suspended Solids	1.8	mg/L	1.0	1		10/13/16 08:58	8	
350.1 Ammonia	Analytical Met	hod: EPA 35	50.1 1993 Rev 2.0					
Nitrogen, Ammonia	ND	mg/L	0.20	1		10/13/16 12:39	9 7664-41-7	
4500 Chloride	Analytical Met	hod: SM 450	00-CI-E-2011					
Chloride	51.8	mg/L	5.0	5		10/13/16 10:23	3 16887-00-6	
Field Data	Analytical Met	hod:						
Collected By	L. Hamelman			1		10/11/16 15:58	3	
Collected Date	10/11/16			1		10/11/16 15:58	3	
Collected Time	15:48			1		10/11/16 15:58	3	
Field pH	7.4	Std. Units	0.10	1		10/11/16 15:58	3	
HEM, Oil and Grease	Analytical Met	hod: EPA 16	664B					
Oil and Grease	ND	mg/L	5.0	1		10/13/16 08:1	5	
200.7 MET ICP	Analytical Met	hod: EPA 20	00.7 Preparation Met	hod: EP	A 200.7			
Tot Hardness asCaCO3 (SM 2340B	219000	ug/L	3300	1	10/13/16 12:36	10/13/16 16:3	4	
Trivalent Chromium Calculation	Analytical Met	hod: Trivale	nt Chromium Calcula	tion				
Chromium, Trivalent	ND	ug/L	5.0	1		10/13/16 17:4	5 16065-83-1	
200.8 MET ICPMS	Analytical Met	hod: EPA 20	00.8 Preparation Met	hod: EP	A 200.8			
Antimony	ND	ug/L	5.0	1	10/13/16 12:36	10/13/16 16:38	8 7440-36-0	
Arsenic	60.6	ug/L	5.0	1	10/13/16 12:36	10/13/16 16:3	8 7440-38-2	
Cadmium	ND	ug/L	1.0	1	10/13/16 12:36	10/13/16 16:3	8 7440-43-9	
Copper	ND	ug/L	5.0	1	10/13/16 12:36	10/13/16 16:3	8 7440-50-8	
Lead	ND	ug/L	5.0	1	10/13/16 12:36	10/13/16 16:3	8 7439-92-1	
Nickel	ND	ug/L	5.0	1	10/13/16 12:36	10/13/16 16:38	8 7440-02-0	
Selenium	ND	ug/L	5.0	1	10/13/16 12:36	10/13/16 16:38	8 7782-49-2	
Silver	ND	ug/L	0.40	1	10/13/16 12:36	10/13/16 16:38	8 7440-22-4	
Thallium	ND	ug/L	1.0	1	10/13/16 12:36	10/13/16 16:38	8 7440-28-0	
Zinc	ND	ug/L	25.0	1	10/13/16 12:36	10/13/16 16:38	8 7440-66-6	
245.1 Mercury	Analytical Met	hod: EPA 24	15.1 Preparation Met	hod: EP	A 245.1			
Mercury	ND	ug/L	0.10	1	10/13/16 10:40	10/13/16 13:42	2 7439-97-6	
Hexavalent Chromium by IC	Analytical Met	hod: EPA 21	18.7					
Chromium, Hexavalent	ND	ug/L	1.0	1		10/13/16 14:30	6 18540-29-9	



SM 2540D

Analysis Method:

Project: Bremo Weekly Process

Pace Project No.: 92315742

QC Batch: 332951

QC Batch Method: SM 2540D Analysis Description: 2540D TSS, Low Level, Eden

Associated Lab Samples: 92315742001

METHOD BLANK: 1845109 Matrix: Water

Associated Lab Samples: 92315742001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Suspended Solids mg/L ND 1.0 10/13/16 08:56

LABORATORY CONTROL SAMPLE: 1845110

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Suspended Solids** mg/L 250 242 97 90-110

SAMPLE DUPLICATE: 1845111

Date: 10/13/2016 06:20 PM

Parameter Units Parameter Units Parameter Units Parameter Parameter Units Parameter Pa

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Analysis Method:

Project: Bremo Weekly Process

Pace Project No.: 92315742

QC Batch: 333018

Date: 10/13/2016 06:20 PM

QC Batch Method: EPA 350.1 1993 Rev 2.0

Associated Lab Samples: 92315742001

v 2.0 Analysis Description:

EPA 350.1 1993 Rev 2.0

350.1 Ammonia, EDEN

Analyzed

Qualifiers

METHOD BLANK: 1845552 Matrix: Water

Associated Lab Samples: 92315742001

Blank Reporting
Parameter Units Result Limit

Nitrogen, Ammonia mg/L ND 0.20 10/13/16 12:39

LABORATORY CONTROL SAMPLE: 1845553

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Nitrogen, Ammonia mg/L 5.1 102 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1845554 1845555

MS MSD MS 92315722001 Spike Spike MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual Nitrogen, Ammonia ND 5 5 5.0 97 90-110 2 mg/L 5.1 99

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



SM 4500-CI-E-2011

Qualifiers

Project: Bremo Weekly Process

Pace Project No.: 92315742

Date: 10/13/2016 06:20 PM

QC Batch: 332976 Analysis Method:

QC Batch Method: SM 4500-CI-E-2011 Analysis Description: 4500 Chloride, EDEN

Associated Lab Samples: 92315742001

METHOD BLANK: 1845225 Matrix: Water

Associated Lab Samples: 92315742001

Blank Reporting
Parameter Units Result Limit Analyzed

Chloride mg/L ND 1.0 10/13/16 10:23

LABORATORY CONTROL SAMPLE: 1845226

Spike LCS LCS % Rec
Parameter Units Conc. Result % Rec Limits Qualifiers

Chloride mg/L 10 9.7 97 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1845227 1845228

MS MSD 92315742001 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual 51.8 90-110 2 Chloride mg/L 10 10 62.4 61.2 105 94

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: Bremo Weekly Process

Pace Project No.: 92315742

QC Batch: 332938 Analysis Method: EPA 1664B

QC Batch Method: EPA 1664B Analysis Description: 1664 HEM, Oil and Grease

Associated Lab Samples: 92315742001

METHOD BLANK: 1845060 Matrix: Water

Associated Lab Samples: 92315742001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Oil and Grease mg/L ND 5.0 10/13/16 08:15

LABORATORY CONTROL SAMPLE: 1845061

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Oil and Grease mg/L 40 35.4 88 78-114

MATRIX SPIKE SAMPLE: 1845062

Date: 10/13/2016 06:20 PM

92315722001 Spike MS MS % Rec Parameter Units Result Conc. Result % Rec Limits Qualifiers ND Oil and Grease 40 34.3 86 78-114 mg/L

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: Bremo Weekly Process

Pace Project No.: 92315742

Date: 10/13/2016 06:20 PM

QC Batch: 332971 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 92315742001

METHOD BLANK: 1845205 Matrix: Water

Associated Lab Samples: 92315742001

ParameterUnitsBlank ResultReporting LimitAnalyzedQualifiersMercuryug/LND0.1010/13/16 13:30

LABORATORY CONTROL SAMPLE: 1845206

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 2.5 2.5 100 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1845208 1845207 MS MSD 92315722001 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual ug/L ND 2.5 2.5 2.4 70-130 Mercury 2.4 94 94 0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: Bremo Weekly Process

Pace Project No.: 92315742

QC Batch: 325732 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET

Associated Lab Samples: 92315742001

METHOD BLANK: 1737866 Matrix: Water

Associated Lab Samples: 92315742001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Tot Hardness asCaCO3 (SM 2340B ug/L ND 3300 10/13/16 16:09

LABORATORY CONTROL SAMPLE: 1737867

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Tot Hardness asCaCO3 (SM 2340B ug/L 82700 86200 104 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1737868 1737869

MS MSD 92315722001 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual Tot Hardness asCaCO3 (SM ug/L 224000 82700 82700 307000 70-130 306000 100 100 0 2340B

Date: 10/13/2016 06:20 PM

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: Bremo Weekly Process

Pace Project No.: 92315742

QC Batch: 325739 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 92315742001

METHOD BLANK: 1737939 Matrix: Water

Associated Lab Samples: 92315742001

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	10/13/16 16:09	
Arsenic	ug/L	ND	5.0	10/13/16 16:09	
Cadmium	ug/L	ND	1.0	10/13/16 16:09	
Copper	ug/L	ND	5.0	10/13/16 16:09	
Lead	ug/L	ND	5.0	10/13/16 16:09	
Nickel	ug/L	ND	5.0	10/13/16 16:09	
Selenium	ug/L	ND	5.0	10/13/16 16:09	
Silver	ug/L	ND	0.40	10/13/16 16:09	
Thallium	ug/L	ND	1.0	10/13/16 16:09	
Zinc	ug/L	ND	25.0	10/13/16 16:09	

TABURATURY CUNTRUL SAMPLE: 1/3/9	MPLE: 1737940	LABORATORY CONTROL
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Date: 10/13/2016 06:20 PM

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
	Units	_ <del></del>		/0 Nec		Qualifiers
Antimony	ug/L	50	48.5	97	85-115	
Arsenic	ug/L	50	52.4	105	85-115	
Cadmium	ug/L	5	4.9	99	85-115	
Copper	ug/L	50	55.9	112	85-115	
Lead	ug/L	50	49.8	100	85-115	
Nickel	ug/L	50	54.9	110	85-115	
Selenium	ug/L	50	54.5	109	85-115	
Silver	ug/L	5	5.0	100	85-115	
Thallium	ug/L	50	50.4	101	85-115	
Zinc	ug/L	250	270	108	85-115	

MATRIX SPIKE & MATRIX SI	PIKE DUPLICAT	E: 17379	41		1737942						
			MS	MSD							
	923	315735001	Spike	Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Antimony	ug/L	ND	50	50	51.9	52.5	95	97	70-130	1	
Arsenic	ug/L	59.9	50	50	110	110	99	101	70-130	1	
Cadmium	ug/L	ND	5	5	4.6	4.7	93	93	70-130	1	
Copper	ug/L	ND	50	50	49.5	50.1	98	100	70-130	1	
Lead	ug/L	ND	50	50	51.2	51.5	102	103	70-130	1	
Nickel	ug/L	ND	50	50	52.3	52.6	100	101	70-130	1	
Selenium	ug/L	ND	50	50	49.8	50.1	97	98	70-130	1	
Silver	ug/L	ND	5	5	4.7	4.7	93	93	70-130	0	
Thallium	ug/L	ND	50	50	52.6	52.6	105	105	70-130	0	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Huntersville, NC 28078 (704)875-9092

# **QUALITY CONTROL DATA**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Date: 10/13/2016 06:20 PM

MATRIX SPIKE & MATRIX SP	IKE DUPLICAT	E: 17379	141		1737942						
			MS	MSD							
	923	315735001	Spike	Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Zinc	ug/L	ND	250	250	239	239	95	95	70-130	0	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: Bremo Weekly Process

Pace Project No.: 92315742

Date: 10/13/2016 06:20 PM

QC Batch: 325677 Analysis Method: EPA 218.7

QC Batch Method: EPA 218.7 Analysis Description: Chromium, Hexavalent IC

Associated Lab Samples: 92315742001

METHOD BLANK: 1737532 Matrix: Water

Associated Lab Samples: 92315742001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Chromium, Hexavalent ug/L ND 1.0 10/13/16 10:29

LABORATORY CONTROL SAMPLE: 1737533

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chromium, Hexavalent ug/L .075 .07J 93 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1737534 1737535

MS MSD 92315722001 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual Chromium, Hexavalent ug/L ND .075 .17J 85-115 5 .075 .16J 97 86

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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# **QUALIFIERS**

Project: Bremo Weekly Process

Pace Project No.: 92315742

#### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

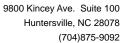
TNI - The NELAC Institute.

#### **LABORATORIES**

Date: 10/13/2016 06:20 PM

PASI-A Pace Analytical Services - Asheville
PASI-C Pace Analytical Services - Charlotte
PASI-E Pace Analytical Services - Eden

PASI-O Pace Analytical Services - Ormond Beach





# **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: Bremo Weekly Process

Pace Project No.: 92315742

Date: 10/13/2016 06:20 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch		
92315742001	T3-161011-1548-S3	SM 2540D	332951				
92315742001	T3-161011-1548-S3	EPA 350.1 1993 Rev 2.0	333018				
92315742001	T3-161011-1548-S3	SM 4500-CI-E-2011	332976				
92315742001	T3-161011-1548-S3						
92315742001	T3-161011-1548-S3	EPA 1664B	332938				
92315742001	T3-161011-1548-S3	EPA 200.7	325732	EPA 200.7	325746		
92315742001	T3-161011-1548-S3	Trivalent Chromium Calculation	325776				
92315742001	T3-161011-1548-S3	EPA 200.8	325739	EPA 200.8	325745		
92315742001	T3-161011-1548-S3	EPA 245.1	332971	EPA 245.1	333011		
92315742001	T3-161011-1548-S3	EPA 218.7	325677				

# Pace Analytical®

# Document Name:

# Sample Condition Upon Receipt(SCUR)

Document No.: F-MEC-CS-009-Rev.03

Document Revised: May 24, 2016

Page 1 of 2

Issuing Authority:
Pace Mechanicsville Quality Office

				Page 2 of 2 for Internal Use ONLY
Sample Condition Upon Client Name:				Project #: WO#: 92315742
John				
Courier:	i ∏usi ∏oti		_	Client 92315742
Custody Seal Present? Yes No Se	als Intact?	<b>⊠</b> Y	es [	No 10.14
Packing Materials   DRubble Man	Bubble Bags		lone /	Date/Initials Person Examining Contents: 10-12-16
Packing Material: Bubble Wrap I Thermometer:	subble bags		/	Other: RSB
☆ RMD001 □	Туре о	f Ice:	Wet	Blue None Samples on ice, cooling process has begun
Correction Factor: 0.0°C Cooler Temp Corrected (	°C):	). Lp		Biological Tissue Frozen? Yes No N/A
Temp should be above freezing to 6°C  USDA Regulated Soil ( \sum N/A, water sample)				
Did samples originate in a quarantine zone within the Unit	ted States: CA	NY, or	SC (check	maps)? Did samples originate from a foreign source (internationally,
Yes No				including Hawaii and Puerto Rico)? Yes No
				Comments/Discrepancy:
Chain of Custody Present?	Myes	□No	□N/A	1.
Samples Arrived within Hold Time?	Yes	No_	□N/A	2.
Short Hold Time Analysis (<72 hr.)?	□Yes	No	□N/A	3.
Rush Turn Around Time Requested?	Yes	□No	□N/A	4.
Sufficient Volume?	Yes	□No	□N/A	5.
Correct Containers Used?	₩yes	□No	□N/A	6.
-Pace Containers Used?	√yes	□No	□N/A	
Containers Intact?	Yes	□No	□Ņ/A	7.
Samples Field Filtered?	□Yes	□No	☑N/A	8. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	Yes	□No	□N/A	9.
-Includes Date/Time/ID/Analysis Matrix:/	NN			
All containers needing acid/base preservation have been	1			10. <sub>HNC3 pH&lt;2</sub>
checked? All containers needing preservation are found to be in	Yes	□No	□N/A	на рнк2
compliance with EPA recommendation?	1			H2SO4 pH<2
(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCI<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	Yes	□No	□N/A	NaOH phb12
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg	Yes	□No	□ M/A	NaOH/ZnOAc pH>9
Samples checked for dechlorination?	Yes	□No	MW/A	11.
Headspace in VOA Vials (>5-6mm)?	Yes	□No	N/A	12.
Trip Blank Present?	Yes	□No	N/A	13.
Trip Blank Custody Seals Present?	□Yes	□No	₩/A	
Pace Trip Blank Lot # (if purchased):		-20 miles	8-137 SAN	
CLIENT NOTIFICATION/RESOLUTION		8		Field Data Required? ☐Yes ☐No
Person Contacted:				Date /Time.
Comments/Sample				Date/Time:
Discrepancy:				
		w 1100 /	······································	45/12/11
Project Manager SCURF Review:	/	VIII	2	Date: (01/3/16)
Project Manager SRF Review:		NM	lb	Date: (0 13 16
Note: Whenever there is a discrepancy affecting North Carol Out of hold, incorrect preservative, out of temp, incorrect co		e sample	es, a copy o	of this form will be sent to the North Carolina DEHNR Certification Office (i.e.

# CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	All analyses to be performed under Golder-Pace man base of the Capital	ADDITIONAL COMMENTS RELINQUISHED BY / AFFILIATION											13-161011-1548-53	E UNIQUE	Section D Val Required Client Information MA:	4	: 24HOH	804-551-0129 Fax: 804-358-2900	Mormand@golder.com	Richmond, VA 23227	2108 W Laburnum Ave, Ste 2	Golder Associates	Section A Required Client Information:
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SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER:		NO											10/11/16	COMPOSITE ENDICISMS	COLLECTED			25)		mox			
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leceived on Ice (Y/N)	<	SAN											pH an	923 Pace P	15 m					~			
Custody ealed Cooler		IPLE CX											alysis	Proje					OTHER	DRIN			9
(Y/N)	14	SAMPLE CONDITIONS											@ /3	15742					ER	DRINKING WATER			-
amples Intact (Y/N)		S											pH analysis @ /3 .5 8; pH = x.4	923   5742 Pace Project No./ Lab I.D						VATER			